

SECOND TEST. ECON 100C, SPRING 2014. NAME: \_\_\_\_\_

Fill in the blanks, and answer in the spaces provided. Show your work.

**1. Monopoly.** I wrote a fantasy novel, so I have the monopoly on selling it in book form. I must sell all of the books at the same price. Demand for my books is defined by the marginal benefit schedule given in the second column below. Each book costs \$10 to produce.

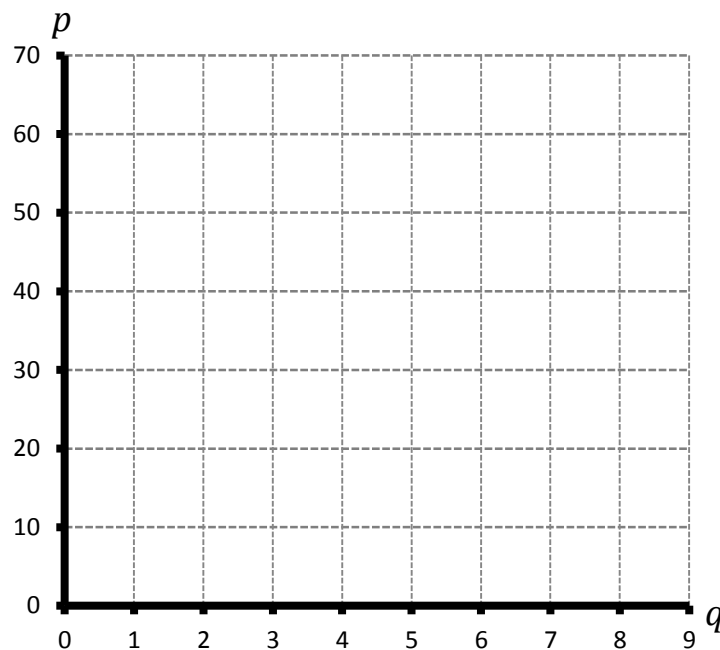
a) Fill in the columns for total revenue ( $R$ ) and marginal revenue ( $MR$ ).

b) To maximize my profit, I should sell a quantity of \_\_\_\_\_ books, at a price of \_\_\_\_\_. At this quantity and price, consumer surplus will be \_\_\_\_\_. When added to my producer surplus of \_\_\_\_\_, this gives a total economic surplus of \_\_\_\_\_.

c) If I lost my copyright, so that anyone could make and sell copies of my book for a cost of \$10 each, the equilibrium price would be \_\_\_\_\_, the equilibrium quantity would be \_\_\_\_\_, consumer surplus would be \_\_\_\_\_, producer surplus would be \_\_\_\_\_, and total economic surplus would be \_\_\_\_\_.

d) Draw the marginal benefit ( $MB$ ), marginal revenue ( $MR$ ), and marginal cost ( $MC$ ) functions in the blank graph below. Shade in the area corresponding to the deadweight loss caused by my being a monopolist rather than a group of perfectly competitive firms.

$Q$	$MB$	$R$	$MR$
1	68		
2	56		
3	45		
4	35		
5	26		
6	18		
7	11		
8	5		
9	0		



**2. Public good.** Three roommates are deciding how many Nintendo games to get for their house. Suppose that Nintendo games are entirely non-rival and non-excludable for them, and that each game costs \$50. Each roommate has the same individual total benefit schedule, given in dollar amounts in the column below marked  $TB_i$ .

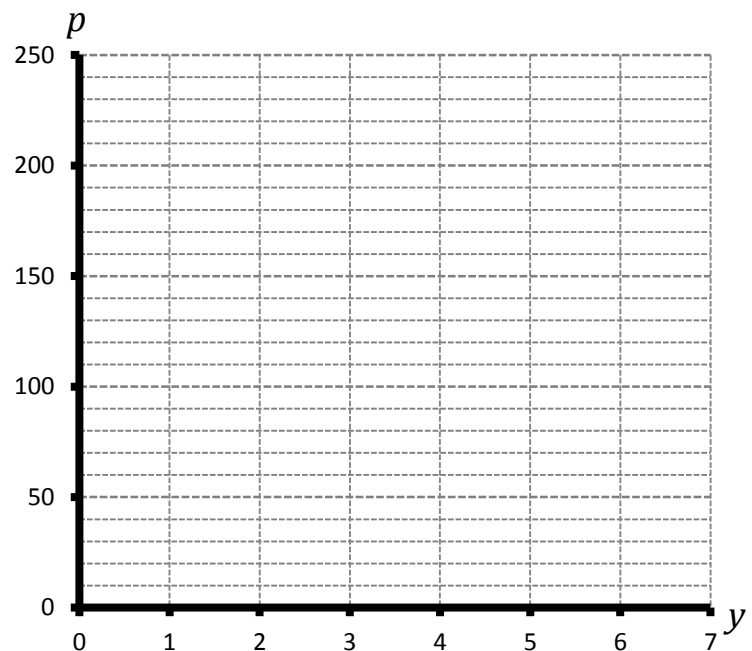
a) Fill in the missing information in the table below, i.e. the columns for  $MB_i$  (marginal individual benefit)  $MSB$  (marginal social benefit),  $TSB$  (total social benefit),  $TC$  (total cost), and  $TES$  (total economic surplus).

b) If there is no possibility of collective action, and each roommate must decide privately how many Nintendo games to buy, then the equilibrium quantity will be \_\_\_\_\_, and total economic surplus will be \_\_\_\_\_.

c) However, the socially optimal quantity of Nintendo games is \_\_\_\_\_, and total economic surplus will be \_\_\_\_\_.

$Q$	$TB_i$	$MB_i$	$MSB$	$TSB$	$TC$	$TES$
1	70					
2	125					
3	165					
4	195					
5	215					
6	230					
7	240					

d) On the graph to the right, draw the marginal individual benefit ( $MB_i$ ) and marginal social benefit ( $MSB$ ) 'curves'. Mark the equilibrium without coordination ( $y^*$ ) and the optimum ( $y^o$ ). Shade in the area that represents the *difference* in economic surplus between the uncoordinated equilibrium and the optimum.



**3. Positive externality.** Suppose the market for a certain good (e.g. 'education') is perfectly competitive, but that the good causes a *positive* externality. Marginal private benefit, marginal private cost, and marginal external benefit are given by the functions below:

$$MB = 50 - 3q \qquad MC = 10 + q \qquad MEB = 16$$

**a) No policy.** Given that there is no policy to address the externality, find the equilibrium quantity, price, consumer surplus, producer surplus, external benefit, and total economic surplus.

$$q^* = \underline{\hspace{2cm}} \qquad p^* = \underline{\hspace{2cm}} \qquad CS^* = \underline{\hspace{2cm}}$$

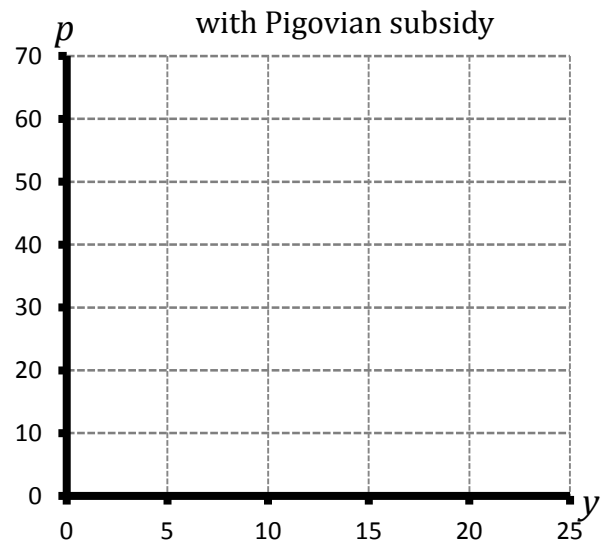
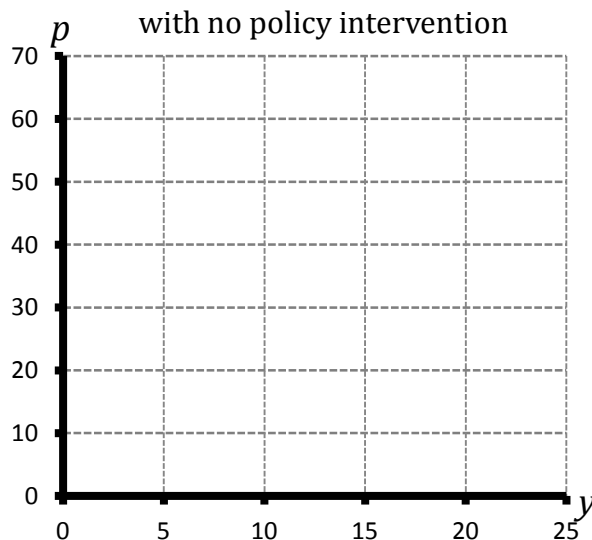
$$PS^* = \underline{\hspace{2cm}} \qquad EB^* = \underline{\hspace{2cm}} \qquad TES^* = \underline{\hspace{2cm}}$$

**b) Pigovian subsidy.** To maximize total economic surplus, the government should grant a subsidy of  $\sigma^o = \underline{\hspace{2cm}}$  per unit to the consumers. Given this, find the equilibrium quantity, price, consumer surplus, producer surplus, external benefit, government expenditure, and total economic surplus.

$$q^o = \underline{\hspace{2cm}} \qquad p^o = \underline{\hspace{2cm}} \qquad CS^o = \underline{\hspace{2cm}}$$

$$PS^o = \underline{\hspace{2cm}} \qquad EB^o = \underline{\hspace{2cm}} \qquad GE^o = \underline{\hspace{2cm}} \qquad TES^o = \underline{\hspace{2cm}}$$

**c) Graphing.** On the left, graph the market with no policy intervention, labeling  $CS^*$ ,  $PS^*$ ,  $EB^*$ , and deadweight loss ( $DWL$ ). On the right, graph the market with the subsidy, labeling  $CS^o$  and  $PS^o$ .



#### 4. Reflection questions

a) Let's talk about my fantasy novel some more, supposing as in 1b that I have the copyright and can enforce it. But now suppose that I can sell to different consumers at different prices, *and* that I have the ability to psychically determine the marginal benefit of each buyer. Assuming that I choose prices to maximize my profit, find the numerical values of consumer surplus (*CS*), my producer surplus (*PS*), total economic surplus (*TES*), and deadweight loss (*DWL*, i.e. difference in total economic surplus relative to the perfectly competitive case). Explain the intuition for your result as clearly as possible.

b) In the positive externality problem above, who is made better off by the Pigovian subsidy? By how much are they made better off, altogether?

c) Who is made worse off by the Pigovian subsidy? By how much?

d) Explain as clearly as possible why decentralized markets do not generally yield Pareto optimal outcomes where public goods are concerned. That is, why might it be possible to reach a more efficient result through taxation and spending by governments than simply 'letting the market work'? Try to explain this in a way that someone who hasn't taken an economics class could understand.